

What is claimed is:

1. A method for improving a chemical mechanical polishing process, said method comprising: detecting harmonic oscillation; and countering the noise associated with the harmonic oscillation while the harmonic oscillation is either reduced or eliminated by changing one or more characteristics of the process.

2. A method of reacting to harmonic oscillation in a chemical mechanical polishing process, said method comprising: using a control system to detect either harmonic oscillation or noise associated therewith; and using the control system to react by at least one of: changing at least one characteristic of the chemical mechanical polishing process to reduce the harmonic oscillation, introducing vibration into the process to counter the harmonic oscillation, and generating an audio signal to counter the noise associated with the harmonic oscillation.

3. The method as recited in claim 2, further comprising sensing a frequency and performing time analysis to determine whether harmonic oscillation is occurring.

4. The method as recited in claim 2, further comprising using a detector to detect the harmonic oscillation and using a controller to evaluate information received from the detector, determine which characteristics are to be changed, and effect the change.

5. The method as recited in claim 2, said step of changing at least one characteristic of the chemical mechanical polishing process comprising at least one of increasing slurry flow, changing down force pressure, changing a rotational velocity of a wafer carrier, and changing rotational velocity of a polishing table.

5

6. The method as recited in claim 2, further comprising determining a harmonic spectrum associated with scratches formed during the chemical mechanical polishing process.

10

7. The method as recited in claim 2, further comprising recording changes as effected.

15

8. The method as recited in claim 2, further comprising recording changes as effected and changing characteristics of the chemical mechanical polishing process about a set point.

9. The method as recited in claim 2, further comprising performing experiments to determine how characteristics of the chemical mechanical polishing process should be changed to reduce harmonic oscillation.

20

10. The method as recited in claim 2, further comprising sensing a frequency and performing time analysis to determine whether harmonic oscillation is occurring, and using a controller to evaluate information received from the detector and determine which characteristics are to be changed.

5

11. The method as recited in claim 2, further comprising detecting noise, analyzing the frequency and intensity of the noise; generating an audio signal based on what was detected and analyzed; and broadcasting the audio signal to counter the noise.

10

12. The method as recited in claim 2, further comprising vibrating a platen to counter the harmonic oscillation.

13. A method of reducing harmonic oscillation in a chemical mechanical polishing process, said method comprising: performing experiments to determine how characteristics of the chemical mechanical polishing process should be changed to reduce harmonic oscillation; using a detector to detect harmonic oscillation associated with the chemical mechanical polishing process; using a controller to evaluate information received from the detector and determine which characteristics are to be changed; and using the controller to change at least one characteristic of the chemical mechanical polishing process to reduce the harmonic oscillation which has been detected.

15

20

14. A control system for reacting to harmonic oscillation in a chemical mechanical polishing process, said control system comprising a detector configured to detect either harmonic oscillation or noise associated therewith; and a reactor configured to receive information from the detector and react by at least one of: changing at least one characteristic of the chemical mechanical polishing process to reduce the harmonic oscillation, introducing vibration into the process to counter the harmonic oscillation, and generating an audio signal to counter the noise associated with the harmonic oscillation.

15. The control system as recited in claim 14, said reactor comprising a controller, said detector configured to sense frequency and at least of said detector and said controller configured to perform time analysis to determine whether harmonic oscillation is occurring.

16. The control system as recited in claim 14, said reactor comprising a controller, wherein said controller is configured to at least one of increase slurry flow, change down force pressure, change a rotational velocity of a wafer carrier, and change rotational velocity of a polishing table.

17. The control system as recited in claim 14, said reactor comprising a controller, at least one of said detector and said controller configured to determine a harmonic spectrum associated with scratches formed during the chemical mechanical polishing process.

18. The control system as recited in claim 14, said reactor comprising a controller, wherein said controller is configured to record changes as effected.

19. The control system as recited in claim 14, said reactor comprising a controller, wherein said controller is configured to record changes as effected and change characteristics of the chemical mechanical polishing process about a set point.

20. The control system as recited in claim 14, said reactor comprising a controller, wherein the controller is configured to change characteristics of the chemical mechanical polishing process based on experiments which have been performed.

21. The control system as recited in claim 14, said reactor comprising an analyzer connected to said detector, an audio signal generator connected to said analyzer, and a speaker connected to said audio signal generator, said detector configured to detect noise, said analyzer configured to analyze the frequency and intensity of the noise, said audio signal generator configured to generate an audio signal based on what was detected and analyzed, and said audio signal generator configured to use said speaker to broadcast the audio signal to counter the noise associated with the harmonic oscillation.

22. The control system as recited in claim 14, said reactor comprising a

controller connected to a sensor and a driver, said controller configured to use the sensor to sense harmonic oscillation and use the driver to introduce vibration into the chemical mechanical polishing process to counter the harmonic oscillation.